when their *Gas* is gone, they are found to contain two Sorts of ſuch-like Earths; the one abſorbent, fermenting with Acids; and the other fixt, or Talcky: And that this Subſtance is really Talcky, is confirmed by the digging up of a pretty deal of Talc in the ſinking this Well.

All the Salts of the medical Waters are more generally alcaline than acid, being of a Martial Nature, impregnated with Sulphur, which gives them a muriatic Taſte.

We may hence conclude, that this *Weſtaſhton* Water is a very good Chalybeat Water; and, by Report, more plentiful and more conſtant all the Year round, than the Well at *Holt*, which Spring diminiſhes much at a certain time of the Year; but both ſeem alike for their Virtues, and phyſical Uſe, being both alike Martial.

XXI. *An Examination of the* Chiltenham *Mineral Water, by* Conradus-Hieronymus Senckenberg; *which may ſerve as a* Method *in* general *for examining* Mineral Waters.

THE Water is bright and clear to the Sight, of no Smell, yet of a bitter Taſte.

To know its conſtituent Parts, the following Experiments were made; and, firſt, to try whether there is any *alcaline Salt* in it.

Rheniſh Wine was mixt with the Mineral Water. *Rheniſh Wine* is a ſubtilized *Acidum eſſentiale* in a ſpirituous and oily Liquor: Wherefore an *alcaline Salt* ſhould have been manifeſted; but it was unaltered.

Diſtilled Vinegar is a ſtronger vegetable Acid; but, mixt with the Water, procures no Alteration.

Spiritus Salis, *Nitri*, and *Vitrioli*, the three ſtrongeſt and pureſt mineral Acids, being mixt with the Mineral Water, there was no Change or Precipitation.

Mercurius ſublimatus corroſivus, is a Diſſolution of Quickſilver in concentred Spirit of Salt, which, being diſſolved in common diſtilled Water, manifeſted not only the volatile, but alſo the fixed alcaline Salt, in any Liquor, inſomuch that it precipitates the *Volatiles* to a *white*, and the *fixed* alcaline Salts to a *red* Powder; but, mixt with this Water, produced no Precipitation.

Vitriolum Martis is an acid Salt, intimately mixt with Iron-earth: Being diſſolved, and put into another Liquor, it will preſently betray the alcaline Salts by precipitating them; but ſhould it find no contrary Salt, then ſomewhat of the Iron-earth will ſettle to the Bottom; as is common in diſſolving all ſorts of *Copperas:* And ſo it happened by mixing this Mineral Water with it, when a brown Powder ſettled, which is the *Terra Martialis*.

All theſe Experiments ſhew evidently, that no *alcaline Salt* is in the ſaid Mineral Water.

For, to try whether there is any acid Salt to be found in this Water, the following Mixtures were made:

Aqua Calcis Vivæ, which contains an Earth impregnated with *alcaline Salt*, makes a very quick Diſcovery of an *Acid*, by Precipitation; but, mixt with this Water, cauſed no Variation.

Syrupus Violarum, having a very ſenſible vegetable Tincture, which, by mixing it with a ſmall Quantity of of any *Acid*, turns *red*, and, with an *alcaline* Salt, *green*; but, mixt with this Water, keeps its Colour.

Oleum Tartari per Deliquium, which is an *alcaline* Salt, diſſolved in Water: And,

Spiritus Salis Armoniaci, a volatile *alcaline* Salt in Water, they being mixt with this Mineral Water, the Mixture grew milky, and a little after a white Precipitate ſettled. This happens when a fixed or a volatile alcaline Salt meets with a neutral Salt; then they join together, and ſomewhat of the alcaline Earth falls down.

Milk mixt with a Mineral Water, and boiled in equal Proportion, will make a Separation, by meeting with either an *acid* or *alcaline* Salt in it, or, by finding of the laſt Salt, the Mixture will change red; but our Mineral Water may be boiled with it in ſeveral Proportions, without any Change or Precipitation.

According to theſe Experiments, there is no *acid Salt* in this Water.

To ſee whether there is no *Iron* or *Copperas* in it,

If the *Solution* of *Galls* is mixt with any Liquor, and grows black, then it is a Sign of *Iron* or *Copperas*; but our Mineral Water, mixt with it, turned a little browniſh, becauſe of the Salt in the Water.

To know whether there is any *Brimſtone* in a Mineral Water, it is to be inquired with a poliſhed Piece of Silver, which, being put in the Water, will turn black or yellowiſh; but this did not happen with this Water.

To find out the *acidum ſalinum* in a Mineral Water, you muſt mix with it *Solutio Argenti*, which turns inſtantly *white*, and a light Precipitate falls, being the *Luna Cornea*.

A Solution of *Saccharum Saturni*, mixt with the Water, yields the *Magiſterium Saturni.*

All the above-mentioned Experiments certify, that our Mineral Water contains no *alcaline* nor *acid Salt*, no *Iron*, *Copperas*, or *Brimſtone:* Therefore from the ſame Experiments it is evident, that the *Chiltenham* Water conſiſts of a *Sal medium fixum vel neutrum*, and a diſſolvable *Terra alcalina vel cretacea*, which may be ſeparated.

By a *Sal medium*, is to be underſtood, a Salt being neither of an *alcaline* nor an *acid* Nature; and that will not precipitate any Solution made with ſuch Salts, nor, mixt with the Syrup of Violets, will change its Colour.

Theſe neutral Salts have always their Origin from an *alcaline* and an *acid Salt*; and, according to the *alcaline Salt* they meet with, ſo they are qualified. So we have the *Tartarus vitriolatus*, conſiſting of the *Sal alcali fixum*, and *Acidum vitriolicum.*

The *Arcanum duplicatum* of the *Sal alcali*, Salt-petre, and *Acidum vitriolicum.*

The *Sal Mirabile* GLAUBERI, conſiſting of common Salt, and its *Terra fluxilis*, and an *Acidum vitriolicum*; but with this Difference, that the *Sal Mirabile* will ſoon melt in a Crucible with a gentle Fire; but *Tartarus vitriolatus*, *Arcanum duplicatum*, *&c.* will not melt, even with the ſtrongeſt Heat, becauſe of the Difference of the Earth in the alcaline Salt, which in the common alcaline Salt is very fixt, but in the common Salt very volatile and fuſible.

Such a *Sal medium* as the *Sal mirabile*, we find in this Mineral Water, yet mixt with ſome common Salt.

As for the Bitterneſs of this Water, there is no other Reaſon for it than the *Terra Cretacea*, which is proved

by

by the *Epſom* Salt, where the *Terra alcalina Salis communis*, joined with the *Acidum vitriolicum*; and after the ſame manner in the *Sal mirabile*, the alcaline Earth cauſes the bitter Taſte. The ſame may alſo be found, by mixing Quick-lime with Spirit of Vitriol, and it will produce a very bitter Taſte; but the Mixture of Quick-lime with Spirit of Nitre cauſes a Bitterneſs which exceeds Gall.

One Pound *Troy* of this Water yields 29 Grains of the ſaid *Sal medium*, and 3 Grains of the Earth.

Remarks by C. M.

The Right Honourable the Lord *Cadogan* had communicated a ſhort Account of theſe Waters to the *Royal Society* on *April* 17. 1735. being a Letter his *Lordſhip* had received from Mr. *Tho. Dundaſs*, Surgeon to his Lordſhip's Regiment, dated at *Glouceſter*, *March* 25. 1735. wherein he gives an Account of ſome few Experiments he had made on theſe Waters, which moſtly agree with the preceding ones; as that there were no Marks of a Chalybeat Nature in them; nor any Signs of *Nitre* or *Sulphur*: But that ſix Quarts of this Water being diſtilled very carefully, the Sediment at the Bottom of the Veſſel was nothing more than *Alum* and *Sal Gem*, to which it owes its *purgative Quality*. Some of the Salt of this Water, being put into a Solution of Silver, quickly made a Precipitation of the Silver. Mr. *Dundaſs* ſays, that ſome alcaline Liquors, as *Oil of Tartar*, Spirit of *Sal Ammoniac*, *&c.* being dropt into ſome of the Water, immediately produced a violent Efferveſcence; which plainly ſhews a great *Acidity*; which he aſcribes to the *Alum* in this Water. M. *Senckenberg* found no ſuch Effervescence on mixing theſe two alcaline Liquors with the Water; but only ſays it grew milky, and a little white Precipitate ſubſided. I can account for this material Difference no otherwiſe, than by ſuppoſing, that the *Acid*, which cauſed the Effervescence in Mr. *Dundaſs*'s Experiment, was a volatile *Gas*, which was not quite ſpent in being carried no farther than *Glouceſter*, but which was quite evaporated and flown away before the Water came into M. *Senckenberg*'s Hands in *London*: And as to the *Alum*, M. *Senckenberg* did not attend to it.

"Mr. *Dundaſs* thinks theſe Waters may be of Uſe in a lax Conſti-
"tution; when the Humours are of an *alcaleſcent* Nature; but, when
"*aceſcent*, muſt do Hurt."

XXII. *An*